IN THE CLAIMS

1.-29. (Canceled)

30. (Currently Amended) Apparatus for assessment of relative changes in the cross sectional area of a limb artery, comprising:

a measurement cuff adapted to apply a pressure to an artery;

a measurement unit adapted to determine, over one or more cardiac cycles, a value for a parameter related to the cross-sectional area of the artery, while the pressure is applied;

a controller adapted to apply to the cuff a pressure that causes the cross-sectional area of the artery to change between systole and diastole much more than if the pressure is not applied, and to induce at least two measurement rounds of the parameter by the measurement unit while the pressure is applied; and

a processor adapted to compare the values determined by the measurement unit in the at least two measurement rounds; wherein

the controller is adapted to apply a pressure between the diastole and systole pressure levels of the artery such that the artery collapses in diastole and recuperates in systole..

31. (Previously Presented) Apparatus according to claim 30, wherein the measurement cuff includes a hydraulic or pneumatic pump adapted to apply the pressure.

32. (Previously Presented) Apparatus according to claim 30, wherein the measurement cuff includes a motor adapted to pull a strap that applies the pressure.

33. (Canceled)

34. (Previously Presented) Apparatus according to claim 30, wherein the cuff is adapted to apply the pressure substantially around an entire circumference of a limb including the artery.

35. (Previously Presented) Apparatus according to claim 30, wherein the measurement cuff is adapted to apply a local pressure which does not substantially affect other blood vessels in a same limb as the artery.

36. (Previously Presented) Apparatus according to claim 30, wherein the measurement unit is adapted to measure a bio-impedance.

37. (Previously Presented) Apparatus according to claim 36, wherein the measurement unit includes disposable electrodes.

38. (Previously Presented) Apparatus according to claim 30, wherein the controller is adapted to induce at least one of the measurement rounds responsive to an indication that a stimulus was administered to the artery and at least one of the measurement rounds before the indication that the stimulus was administered to the artery is received.

39. (Previously Presented) Apparatus according to claim 30, wherein the controller is adapted to apply the pressure continuously over at least five cardiac cycles of the patient.

40. (Canceled)

41. (Previously Presented) Apparatus according to claim 30, wherein the controller is adapted to apply a pressure substantially equal to the mean artery pressure of the artery.

42. (Previously Presented) Apparatus according to claim 30, wherein the controller is adapted to apply a plurality of different pressure levels during a single measurement round.

43. (Previously Presented) Apparatus according to claim 42, wherein the controller is adapted to apply a continuously changing pressure.

44. (Previously Presented) Apparatus according to claim 30, wherein the processor is adapted to calculate a change in the cross-sectional area of the artery over a single cardiac cycle of each of the measurement rounds and to compare the calculated changes of the measurement rounds.

45. (Previously Presented) Apparatus according to claim 44, wherein the processor is adapted to select, for each measurement round, a single cardiac cycle from the one or more cardiac cycles for which the parameter value was determined and to calculate the change for the selected cardiac cycle.

46. (Previously Presented) Apparatus according to claim 30, wherein the processor is adapted to estimate an envelope of the measured parameter values and find a maximal parameter value difference from the envelope.

47. (Previously Presented) Apparatus according to claim 30, wherein the measurement cuff or parts thereof are disposable.

48.-55. (Canceled)

56. (Previously Presented) An apparatus according to claim 30, wherein the measurement cuff is further adapted to apply a stimulus to the artery.

57. (Previously Presented) An apparatus according to claim 56, wherein the measurement cuff is adapted to apply the stimulus by occlusion of a blood vessel.

58. (Currently Amended) Apparatus for assessment of relative changes in the cross sectional area of a limb artery, comprising:

a measurement cuff adapted to apply a pressure to an artery;

a measurement unit adapted to determine, over one or more cardiac cycles, a value for a parameter related to the cross-sectional area of the artery, while the pressure is applied;

a controller adapted to apply to the cuff a pressure that causes the cross-sectional area of the artery to change between systole and diastole much more than if

the pressure is not applied, and to induce at least two measurement rounds of the parameter by the measurement unit while the pressure is applied; and

a processor adapted to compare the values determined by the measurement unit in the at least two measurement rounds;

~~An apparatus according to claim 57,~~

further comprising a second measurement cuff wherein the measurement cuff and the second measurement cuff are adapted to restrict the flow of blood and apply the pressure on the artery, respectively;

wherein the measurement cuff is further adapted to apply a stimulus to the artery by occlusion of a blood vessel.

59. (Previously Presented) An apparatus according to claim ~~56~~ 58, wherein the controller is adapted to restrict the flow of blood through the artery for at least 3 minutes using the measurement cuff.

60. (Previously Presented) An apparatus according to claim ~~30~~ 58, wherein the processor is adapted to provide a score indicative of the endothelial function of the artery based on the values determined by the measurement unit in the at least two measurement rounds.

61. (Previously Presented) An apparatus according to claim 60, wherein the score is additionally a function of at least one patient attribute.

62. (Previously Presented) An apparatus according to claim 36, wherein the controller is adapted to apply pressure to the cuff and to measure an impedance through the measurement unit, substantially concurrently.

63. (Previously Presented) An apparatus according to claim 62, wherein the measurement unit is comprised of at least four electrodes when sensing bio-impedance.

64. (Previously Presented) An apparatus according to claim 36, wherein the measurement unit comprises an alternating current source and an alternating voltage measurement unit.

65. (Currently Amended) Apparatus for assessment of relative changes in the cross sectional area of a limb artery, comprising:

a measurement cuff adapted to apply a pressure to an artery;

a measurement unit adapted to determine, over one or more cardiac cycles, a value for a parameter related to the cross-sectional area of the artery, while the pressure is applied;

a controller adapted to apply to the cuff a pressure that causes the cross-sectional area of the artery to change between systole and diastole much more than if the pressure is not applied, and to induce at least two measurement rounds of the parameter by the measurement unit while the pressure is applied; and

a processor adapted to compare the values determined by the measurement unit in the at least two measurement rounds; ~~An apparatus according to claim 62,~~

wherein the measurement unit is adapted to measure a bio-impedance; and

wherein the controller is adapted to apply pressure to the cuff and to measure an impedance through the measurement unit, substantially concurrently; and

wherein the controller is adapted to calculate an endothelial functioning score, responsive to the impedance measurements.

66. (Canceled)

67. (Previously Presented) An apparatus according to claim 30, wherein the controller is adapted to administer at least one drug to a patient as a stimulus.

68. (New) An apparatus according to claim 30, wherein the controller is adapted to calculate an endothelial functioning score, responsive to the impedance measurements.

69. (New) Apparatus according to claim 65, wherein the measurement cuff includes a hydraulic or pneumatic pump adapted to apply the pressure.

70. (New) Apparatus according to claim 65, wherein the measurement cuff includes a motor adapted to pull a strap that applies the pressure.

71. (New) Apparatus according to claim 65, wherein the cuff is adapted to apply the pressure substantially around an entire circumference of a limb including the artery.

72. (New) Apparatus according to claim 65, wherein the measurement cuff is adapted to apply a local pressure which does not substantially affect other blood vessels in a same limb as the artery.

73. (New) Apparatus according to claim 65, wherein the measurement unit includes disposable electrodes.

74. (New) Apparatus according to claim 65, wherein the controller is adapted to induce at least one of the measurement rounds responsive to an indication that a stimulus was administered to the artery and at least one of the measurement rounds before the indication that the stimulus was administered to the artery is received.

75. (New) Apparatus according to claim 65, wherein the controller is adapted to apply the pressure continuously over at least five cardiac cycles of the patient.

76. (New) Apparatus according to claim 65, wherein the controller is adapted to apply a pressure between the diastole and systole pressure levels of the artery such that the artery collapses in diastole and recuperates in systole.

77. (New) Apparatus according to claim 65, wherein the controller is adapted to apply a pressure substantially equal to the mean artery pressure of the artery.

78. (New) Apparatus according to claim 65, wherein the controller is adapted to apply a plurality of different pressure levels during a single measurement round.

79. (New) Apparatus according to claim 78, wherein the controller is adapted to apply a continuously changing pressure.

80. (New) Apparatus according to claim 65, wherein the processor is adapted to calculate a change in the cross-sectional area of the artery over a single cardiac cycle

of each of the measurement rounds and to compare the calculated changes of the measurement rounds.

81. (New) Apparatus according to claim 80, wherein the processor is adapted to select, for each measurement round, a single cardiac cycle from the one or more cardiac cycles for which the parameter value was determined and to calculate the change for the selected cardiac cycle.

82. (New) Apparatus according to claim 65, wherein the processor is adapted to estimate an envelope of the measured parameter values and find a maximal parameter value difference from the envelope.

83. (New) Apparatus according to claim 65, wherein the measurement cuff or parts thereof are disposable.

84. (New) An apparatus according to claim 65, wherein the measurement cuff is further adapted to apply a stimulus to the artery.

85. (New) An apparatus according to claim 84, wherein the measurement cuff is adapted to apply the stimulus by occlusion of a blood vessel.

86. (New) An apparatus according to claim 85, further comprising a second measurement cuff wherein the measurement cuff and the second measurement cuff are adapted to restrict the flow of blood and apply the pressure on the artery, respectively.

87. (New) An apparatus according to claim 86, wherein the controller is adapted to restrict the flow of blood through the artery for at least 3 minutes using the measurement cuff.

88. (New) An apparatus according to claim 65, wherein the processor is adapted to provide a score indicative of the endothelial function of the artery based on the values determined by the measurement unit in the at least two measurement rounds.

89. (New) An apparatus according to claim 88, wherein the score is additionally a function of at least one patient attribute.

90. (New) An apparatus according to claim 65, wherein the measurement unit is comprised of at least four electrodes when sensing bio-impedance.

91. (New) An apparatus according to claim 90, wherein the measurement unit comprises an alternating current source and an alternating voltage measurement unit.

92. (New) An apparatus according to claim 30, wherein the processor is adapted to provide a score indicative of the endothelial function of the artery based on the values determined by the measurement unit in the at least two measurement rounds.

93. (New) An apparatus according to claim 65, wherein the controller is adapted to administer at least one drug to a patient as a stimulus.